AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application.

1. (Withdrawn) An infrared sensor IC comprising: a compound semiconductor sensor, having a compound semiconductor including indium and antimony, and detecting an infrared radiation by said compound semiconductor to output an electric signal indicating the detection; and an integrated circuit processing said electric signal output by said compound semiconductor sensor to perform a predetermined operation, wherein said compound semiconductor sensor and said integrated circuit are arranged in a single package in a hybrid manner.

2. (Withdrawn) The infrared sensor IC according to claim 1, wherein said compound semiconductor sensor comprises a substrate; a compound semiconductor layer that is formed on said substrate with a buffer layer which is a layer for relaxing a lattice mismatch, the buffer layer being sandwiched between the compound semiconductor layer and the substrate

3. (Withdrawn) The infrared sensor IC according to claim 2, wherein said buffer layer is one of AlSb, AlGaSb, AlGaAsSb, AlInSb, GaInAsSb and AlInAsSb

4. (Withdrawn) The infrared sensor IC according to any of claims 1 to 3, wherein said compound semiconductor layer is formed of a single first compound semiconductor layer, and said first compound semiconductor layer is one of InSb, InAsSb, InSbBi, InAsSbBi, InTlSb, InTlAsSb, InSbN and InAsSbN

5. (Withdrawn) The infrared sensor IC according to claim 4, wherein said first compound semiconductor layer is p-type doped.

6. (Withdrawn) The infrared sensor IC according to any of claims 1 to 3, wherein said compound semiconductor layer comprises a second compound semiconductor layer that is a material including indium and antimony; and a third compound semiconductor layer that is formed on said second compound semiconductor layer, so as to be heterojunction with said second compound semiconductor layer, and that is a material that includes antimony and differs from that of said second compound semiconductor layer.

7. (Withdrawn) The infrared sensor IC according to claim 6, wherein a combination of said third compound semiconductor layer/said second compound semiconductor layer is one of GaSb/InSb, GaInSb/InSb, InSb/InAsSb, GaSb/InAsSb and GaInSb/InAsSb.

8. (Withdrawn) The infrared sensor IC according to claim 6 or 7, wherein both said second compound semiconductor layer and said third compound semiconductor layer, or only said third compound semiconductor layer is p-type doped.

9. (Withdrawn) The infrared sensor IC according to any of claims 1 to 3, wherein said compound semiconductor layer comprises a fourth compound semiconductor layer that is a material including at least one of indium or antimony; and a fifth compound semiconductor layer that is formed on said fourth compound semiconductor layer, so as to be heterojunctional with said fourth compound semiconductor layer, and that is a material including at least one of indium or antimony and differs from that of said fourth compound semiconductor layer, wherein said fourth compound semiconductor layer and said fifth compound semiconductor layer form a superlattice structure, periodically stacked.

10. (Withdrawn) The infrared sensor IC according to claim 9, wherein a combination of said fifth compound semiconductor layer/said fourth compound semiconductor layer is one of InAs/GaSb, InAs/GaInSb, InAs/GaAsSb, InAsSb/GaSb, InAsSb/GaAsSb and InAsSb/GaInSb.

11. (Withdrawn) The infrared sensor IC according to any of claims 1 to 3, wherein said compound semiconductor layer is a p-n junctional stacked layers comprising a compound semiconductor layer which is an n-type doped material including indium and antimony, and a compound semiconductor layer which is a p-type doped material including indium and antimony.

12. (Withdrawn) The infrared sensor IC according to claim 11, wherein said stacked layers is a p-n junctional stacked layers which is one of a p-type doped InSb/an n-type doped InSb, a p-type doped InSb/a p-type doped InAsSb/an n-type doped InSb, a p-type doped GaInSb/a p-type doped InAsSb/an n-type doped GaInSb, and a p-type doped GaInSb/a p-type doped InSb/an n-type doped GaInSb.

13. (Previously Presented) An infrared sensor comprising:

a substrate; and

a compound semiconductor stacked layers formed on said substrate by stacking a plurality of compound semiconductor layers, said compound semiconductor stacked layers comprising:

an n-type doped compound semiconductor layer formed on said substrate, said n-type doped compound semiconductor layer composed of an n-type doped material and including indium and antimony;

a compound semiconductor light absorption layer formed on said n-type doped compound semiconductor layer, said compound semiconductor light absorption layer composed of a non-doped or p-type doped material including indium and antimony; and

a p-type doped compound semiconductor layer formed on said compound semiconductor light absorption layer, said p-type doped compound semiconductor layer composed of a material that is p-type doped at a higher carrier density than said compound semiconductor light absorption layer and has a larger band gap than said n-type doped compound semiconductor layer and said compound semiconductor light absorption layer, wherein said p-type doped compound semiconductor layer functions as a barrier layer.

14. (Previously Presented) The infrared sensor according to claim 13, wherein said n-type doped compound semiconductor layer is InSb, said compound semiconductor light absorption layer is one of InSb, InAsSb and InSbN, and said p-type doped compound semiconductor layer is either AlInSb or GaInSb, or one of AlAs, InAs, GaAs, AlSb and GaSb, or a mixed crystal of those.

15. (Previously Presented) The infrared sensor according to claim 14, wherein an n-type dopant for said n-type doped compound semiconductor layer is doped with Sn, and said compound semiconductor light absorption layer and said p-type doped compound semiconductor layer are doped with Zn.

16. (Previously Presented) The infrared sensor according to any of claims 13 to 15, further comprising:

a compound semiconductor contact layer formed on said p-type doped compound semiconductor layer, said compound semiconductor contact layer composed of a material including indium and antimony and p-type doped at a carrier concentration equal to or greater than the carrier concentration of said p-type doped compound semiconductor layer.

17. (Previously Presented) The infrared sensor according to claim 16, wherein said compound semiconductor contact layer is InSb.

18. (Previously Presented) The infrared sensor according to claim 17, wherein said compound semiconductor contact layer is doped with Zn.

19. (Currently Amended) The infrared sensor according to any of claims 13 to [[18]]15, wherein said substrate is a semi-insulating substrate, or a substrate such that said [[sixth]] n-type doped compound semiconductor layer formed on said substrate can be insulated from said substrate, the infrared sensor further comprising: a first electrode that is formed in an area of said [[sixth]] n-type doped compound semiconductor layer where said [(seventh]] semiconductor light absorption layer is not formed; and a second electrode that is formed in an area on said [[eighth]] p-type doped compound semiconductor layer.

20. (Original) The infrared sensor according to claim 19, wherein a plurality of said compound semiconductor stacked layers are contiguously formed on said substrate, so that a first electrode, formed on a compound semiconductor stacked layers, is connected in series to a second electrode, formed on a compound semiconductor stacked layers adjacent to said compound semiconductor stacked layers on which said first electrode is formed.

21. (Currently Amended) The infrared sensor according to [[claims]] claim 19 [[or 20]], wherein, when an output signal is measured, a bias between said first and said second electrodes is set to zero, and a signal when an infrared radiation enters is read as an open circuit voltage.

22. (Currently Amended) An infrared sensor IC comprising: an infrared sensor according to claims 13 to [[21]]15; and an integrated circuit processing said electric

signal output by said infrared sensor to perform a predetermined operation, wherein said infrared sensor and said integrated circuit are arranged in a single package in a hybrid manner.

23. (Withdrawn) An infrared sensor manufacturing method comprising the steps of: forming, on a substrate, a sixth compound semiconductor layer that is an n-type material including indium and antimony; forming, on said sixth compound semiconductor layer, a seventh compound semiconductor layer that is a non-doped or p-doped material including indium and antimony; and forming, on said seventh compound semiconductor layer, an eighth compound semiconductor layer that is a material that is p-type doped at a higher carrier density than said seventh compound semiconductor layer and has a larger band gap than said seventh compound semiconductor layer.

24. (Withdrawn) The infrared sensor manufacturing method according to claim 23, wherein said sixth compound semiconductor layer is InSb, said seventh compound semiconductor layer is one of InSb, InAsSb and InSbN, and said eighth compound semiconductor layer is either AlInSb or GaInSb, or one of AlAs, InAs, GaAs, AlSb and GaSb, or a mixed crystal of those.

25. (Withdrawn) The infrared sensor manufacturing method according to claims 23 or 24, wherein an n-type dopant for said sixth compound semiconductor layer is Sn, and a p-type dopant for said seventh compound semiconductor layer and said eighth compound semiconductor layer is Zn.

26. (Withdrawn) The infrared sensor manufacturing method according to any of claims 23 to 25, further comprising a step of forming, on said eighth compound semiconductor layer, a ninth compound semiconductor layer including indium and

antimony and is p-type doped at a carrier density equal to or greater than said eighth compound semiconductor layer.

27. (Withdrawn) The infrared sensor manufacturing method according to claim 26, wherein said ninth compound semiconductor layer is InSb.

28. (Withdrawn) The infrared sensor manufacturing method according to claims 26 or 27, wherein a p-type dopant for said ninth compound semiconductor layer is Zn.

29. (New) The infrared sensor according to claim 20, wherein, when an output signal is measured, a bias between said first and said second electrodes is set to zero, and a signal when an infrared radiation enters is read as an open circuit voltage.

30. (New) The infrared sensor according to claim 16, wherein said substrate is a semi-insulating substrate, or a substrate such that said n-type doped compound semiconductor layer formed on said substrate can be insulated from said substrate, the infrared sensor further comprising: a first electrode that is formed in an area of said n-type doped compound semiconductor layer where said semiconductor light absorption layer is not formed; and a second electrode that is formed in an area on said p-type doped compound semiconductor layer.

31. (New) The infrared sensor according to claim 30, wherein a plurality of said compound semiconductor stacked layers are contiguously formed on said substrate, so that a first electrode, formed on a compound semiconductor stacked layers, is connected in series to a second electrode, formed on a compound semiconductor stacked layers adjacent to said compound semiconductor stacked layers on which said first electrode is formed.

32. (New) The infrared sensor according to claim 30, wherein, when an output signal is measured, a bias between said first and said second electrodes is set to zero, and a signal when an infrared radiation enters is read as an open circuit voltage.

33. (New) The infrared sensor according to claim 31, wherein, when an output signal is measured, a bias between said first and said second electrodes is set to zero, and a signal when an infrared radiation enters is read as an open circuit voltage.

34. (New) The infrared sensor according to claim 17, wherein said substrate is a semi-insulating substrate, or a substrate such that said n-type doped compound semiconductor layer formed on said substrate can be insulated from said substrate, the infrared sensor further comprising: a first electrode that is formed in an area of said n-type doped compound semiconductor layer where said semiconductor light absorption layer is not formed; and a second electrode that is formed in an area on said p-type doped compound semiconductor layer.

35. (New) The infrared sensor according to claim 34, wherein a plurality of said compound semiconductor stacked layers are contiguously formed on said substrate, so that a first electrode, formed on a compound semiconductor stacked layers, is connected in series to a second electrode, formed on a compound semiconductor stacked layers adjacent to said compound semiconductor stacked layers on which said first electrode is formed.

36. (New) The infrared sensor according to claim 34, wherein, when an output signal is measured, a bias between said first and said second electrodes is set to

zero, and a signal when an infrared radiation enters is read as an open circuit voltage.

37. (New) The infrared sensor according to claim 35, wherein, when an output signal is measured, a bias between said first and said second electrodes is set to zero, and a signal when an infrared radiation enters is read as an open circuit voltage.

38. (New) The infrared sensor according to claim 18, wherein said substrate is a semi-insulating substrate, or a substrate such that said n-type doped compound semiconductor layer formed on said substrate can be insulated from said substrate, the infrared sensor further comprising: a first electrode that is formed in an area of said n-type doped compound semiconductor layer where said semiconductor light absorption layer is not formed; and a second electrode that is formed in an area on said p-type doped compound semiconductor layer.

39. (New) The infrared sensor according to claim 38, wherein a plurality of said compound semiconductor stacked layers are contiguously formed on said substrate, so that a first electrode, formed on a compound semiconductor stacked layers, is connected in series to a second electrode, formed on a compound semiconductor stacked layers adjacent to said compound semiconductor stacked layers on which said first electrode is formed.

40. (New) The infrared sensor according to claim 38, wherein, when an output signal is measured, a bias between said first and said second electrodes is set to zero, and a signal when an infrared radiation enters is read as an open circuit voltage.

41. (New) The infrared sensor according to claim 39, wherein, when an output signal is measured, a bias between said first and said second electrodes is set to zero, and a signal when an infrared radiation enters is read as an open circuit voltage.

42. (New) An infrared sensor IC comprising: an infrared sensor according to claim 16; and an integrated circuit processing said electric signal output by said infrared sensor to perform a predetermined operation, wherein said infrared sensor and said integrated circuit are arranged in a single package in a hybrid manner.

43. (New) An infrared sensor IC comprising: an infrared sensor according to claim 17; and an integrated circuit processing said electric signal output by said infrared sensor to perform a predetermined operation, wherein said infrared sensor and said integrated circuit are arranged in a single package in a hybrid manner.

44. (New) An infrared sensor IC comprising: an infrared sensor according to claim 18; and an integrated circuit processing said electric signal output by said infrared sensor to perform a predetermined operation, wherein said infrared sensor and said integrated circuit are arranged in a single package in a hybrid manner.

45. (New) An infrared sensor IC comprising: an infrared sensor according to claim 30; and an integrated circuit processing said electric signal output by said infrared sensor to perform a predetermined operation, wherein said infrared sensor and said integrated circuit are arranged in a single package in a hybrid manner.

46. (New) An infrared sensor IC comprising: an infrared sensor according to claim 31; and an integrated circuit processing said electric signal output by said infrared sensor to perform a predetermined operation, wherein said infrared sensor and said integrated circuit are arranged in a single package in a hybrid manner.

47. (New) An infrared sensor IC comprising: an infrared sensor according to claim 32; and an integrated circuit processing said electric signal output by said infrared sensor to perform a predetermined operation, wherein said infrared sensor and said integrated circuit are arranged in a single package in a hybrid manner.

48. (New) An infrared sensor IC comprising: an infrared sensor according to claim 33; and an integrated circuit processing said electric signal output by said infrared sensor to perform a predetermined operation, wherein said infrared sensor and said integrated circuit are arranged in a single package in a hybrid manner.

49. (New) An infrared sensor IC comprising: an infrared sensor according to claim 34; and an integrated circuit processing said electric signal output by said infrared sensor to perform a predetermined operation, wherein said infrared sensor and said integrated circuit are arranged in a single package in a hybrid manner.

50. (New) An infrared sensor IC comprising: an infrared sensor according to claim 35; and an integrated circuit processing said electric signal output by said infrared sensor to perform a predetermined operation, wherein said infrared sensor and said integrated circuit are arranged in a single package in a hybrid manner.

51. (New) An infrared sensor IC comprising: an infrared sensor according to claim 36; and an integrated circuit processing said electric signal output by said infrared sensor to perform a predetermined operation, wherein said infrared sensor and said integrated circuit are arranged in a single package in a hybrid manner.

52. (New) An infrared sensor IC comprising: an infrared sensor according to claim 37; and an integrated circuit processing said electric signal output by said infrared sensor to perform a predetermined operation, wherein said infrared sensor and said integrated circuit are arranged in a single package in a hybrid manner.

53. (New) An infrared sensor IC comprising: an infrared sensor according to claim 38; and an integrated circuit processing said electric signal output by said infrared sensor to perform a predetermined operation, wherein said infrared sensor and said integrated circuit are arranged in a single package in a hybrid manner.

54. (New) An infrared sensor IC comprising: an infrared sensor according to claim 39; and an integrated circuit processing said electric signal output by said infrared sensor to perform a predetermined operation, wherein said infrared sensor and said integrated circuit are arranged in a single package in a hybrid manner.

55. (New) An infrared sensor IC comprising: an infrared sensor according to claim 40; and an integrated circuit processing said electric signal output by said infrared sensor to perform a predetermined operation, wherein said infrared sensor and said integrated circuit are arranged In a single package in a hybrid manner.

56. (New) An infrared sensor IC comprising: an infrared sensor according to claim 41; and an Integrated circuit processing said electric signal output by said infrared sensor to perform a predetermined operation, wherein said infrared sensor and said integrated circuit are arranged in a single package In a hybrid manner.